



# PLANNED, DESIGNED AND CONSTRUCTED WISELY

HELLWEG UTS BIOGAS PLANT PROJECT



# WHY WOULDN'T YOU THINK OF EVERYTHING RIGHT FROM THE START?

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**In general, biogas plants are a good investment, provided that they are planned, designed and constructed wisely and with common sense from the very beginning. This is how UTS works. Why? Because we like to get things done. As our American parent company might put it, we want to make an impact.**

**We go for plants where every single detail has been carefully considered. Plants that safeguard optimum output and minimum emissions, without any concessions. And which are ready for the future.**

Our plants can be adapted and expanded in line with business developments and developments in society (legislation, regulations, political targets...). And last but

not least, our plants always deliver their full potential. No trial and error, but through a meticulous approach. Down to the last detail.

Sounds good, doesn't it? How do we do this? By taking things step by step, and always working closely together with our customers. Biogas plants start with the substrate. What is available, how much is available, and what does it cost? We use this information to calculate and design the technically most efficient substrate pre-treatment and fermentation methods in order to reduce methane losses, minimise energy consumption - for example for the mixers -, and maximise gas yield. And, of course, we also pay attention to the downstream processes and the further approach to be followed.

What happens to the gas? How can

it best be marketed? What happens to the heat generated in the CHP plants? Are there any potential consumers for it? Does it pay to invest in a satellite CHP plant, one connected through a micro gas network? How can the fermentation residues also be put to optimum, profitable use? In the project that is the subject of this article, our client did a great job preparing the project and presented us with a carefully considered, comprehensive, marketing and operating concept. We advised and assisted them on its further development.

Their basic concept was an excellent basis for us to design and construct an optimum biogas plant. To be able to do this, you need to know all the ins and outs of the entire process, and to be able to do your calculations. We are. An example?

## THE HELLWEG BIOGAS PLANT

Imagine a small town in Westphalia, Germany. The town of Büderich is situated in the heart of the very fertile Soester Börde area which is dominated by agriculture. Here, three farmers, Thomas Hagen, Heinrich Schubert and Heinz-Josef Stute-Schlamme, joined forces to create a forward-looking project to ensure a good future for their region: they decided to build a highly efficient and powerful biogas plant which would offer their companies several advantages. The plant is a constant consumer of the produce from the farmers' own fields, but it also refines and utilises manure and slurry from pig and chicken fattening and cattle breeding.

UTS, situated in the neighbouring district in Lippetal, was contacted and decided to be the right biogas plant specialist and adviser, one that was able to help them turn their idea into a clever, properly substantiated plant concept. The farmers founded Bioenergie Hellweg GmbH & Co KG and commissioned UTS to design and build their biogas plant.

## THE MARKETING CONCEPT

In order for the system to yield optimum results, takers for the electricity and generated heat had to be located. For this purpose, the targeted total output of 500 kW was split up. One 250-kW CHP plant now supplies 15 neighbouring houses and a wood chips, grain and corn maize drying plant via a local heat network. The electricity generated is fed into the grid at a fixed price, supported by a 20-year subsidy under the German Renewable Energy Sources Act (EEG). A second 250-kW CHP plant was built as a satellite CHP plant next to a 220-bed hospital, one mile from the biogas plant. It covers 92 % of the heat requirements of the hospital and is supplied with Hellweg biogas via a micro gas network (150-mm pipelines, installed by means of wash boring). The heat utilisation of both CHP plants has led to a further subsidy in the form of a CHP bonus, something which has increased the overall high profitability of the plant even more.





# HAPPY WITH UTS

PROJECT HELLWEG

## ABSORBING MARKET FLUCTUATIONS

The key advantage of a biogas plant for farmers: it enables them to compensate for the risk of market and price fluctuations for their own agricultural produce. Besides producing for their agricultural core business, farmers now also produce for their own power generation plant.

Operating the Hellweg biogas plant requires some 6,500 tons (i.e. metric tons) of maize and 1,000 tons of sugar beet a year. This is used to convert 1,000 tons of chicken manure, 2,500 tons of pig manure and 1,000 m3 of cattle manure from a neighbouring farm into electricity and heat, as well as into high-quality organic manure.

## WHAT HAS UTS DONE?

Quite a lot actually! First of all, we meticulously designed the biogas plant and took on the role of site manager during the actual building phase. Furthermore, a major share of the plant technology was produced by us: fermenters, pumps, feeding facilities and separation. We have retrofitted the latter in order to optimise the removal and utilisation of fermentation residue. The system has been designed to prevent these residues from settling at the bottom of the slurry tanks. They can be pumped out quite easily and applied directly in or close to the soil.

## THE NEXT STEP

After the plant had been success-

fully started up and had proven its long-term worth, Hellweg GmbH & Co. KG started the next expansion stage aimed at repowering and flexibilisation. A second 250-kW CHP unit was put into use at the site of the biogas plant, and a further 350-kW unit is planned at the hospital. This will make more thermal energy available to be sold and it will enable the company to react more flexibly to fluctuating demand and electricity prices. This is an important factor in securing and expanding overall profitability in the long-term, so also after the 20-year EEG subsidy has expired.

## WHY UTS?

Since we are always curious to know why a customer has chosen us, we have also asked these customers this question. The reason why they first contacted us was the combination of our good references and the fact that our company was located so near to them. And it did not take us long to convince Hellweg that we were definitely not newcomers to the market and that we knew what we were doing. Our wide range of services (from design to pipeline construction and building management), and our product portfolio with its many technological highlights (ser-

vice boxes, hydraulic mixers, solids feeding), also helped in this respect. Further positive points: the long service lives of our products, our installed base of biogas plants, and the high safety standards that form the basis of our operations.

## AND WHAT DO OUR CUSTOMERS HAVE TO SAY ABOUT THIS?

Well, let's have them speak for themselves. Thomas Hagen, one of the managing directors of Hellweg: „Looking back, now that the plant has been operational for over 6 years, we are very happy that we

decided to go with UTS. We greatly value the high-quality construction and the good maintenance possibilities. For example, one particular advantage is the UTS service boxes which enable us to quickly maintain and repair the mixers at low cost. The separator has now been in operation for 5 years and we value the low costs of the wear and replacement parts. For us, the separator is an important link in the farm manure processing chain. It simplifies and optimises fertilisation, especially when it is applied directly in the soil or close to the ground.“ ■



Arndt Schubert, Heinz-Josef Stute-Schlamme, Heiner Schubert, Thomas Hagen and Marc Stute-Schlamme (from left to right).